AMENDMENTS TO THE CLAIMS

1. (Currently amended) ~~A shortstopping composition used in emulsion processes for preparing~~ A composition for shortstopping free radical emulsion polymerization of synthetic rubber latexes, the composition comprised of at least one hydrophilic alkylhydroxylamine shortstopping agent and at least one hydrophobic free radical shortstopping agent which is a disubstituted hydroxylamine compound wherein the substitutions are the same and each substitution is a C_{4-10} alkyl.

2. (Original) The composition of Claim 1 dissolved in a solvent medium.

3. (Original) The composition of Claim 2 wherein the solvent medium is water, alcohol, a common organic solvent, or mixture thereof.

4. (Original) The composition of Claim 1 wherein the ratio of the hydrophilic to hydrophobic shortstopper ranges from 95/5 to 5/95.

5. (Original) The composition of Claim 4, wherein the ratio is between 40/60 to 90/10.

Claim 6 (deleted)

7. (Previously amended) The composition of Claim 1, wherein the hydrophobic agent is dibutylhydroxylamine, dibenzylhydroxylamine or mixtures thereof.

Claim 8 (deleted)

9. (Currently amended) The composition of Claim ~~8~~ 1, wherein the hydrophilic agent is diethylhydroxylamine, N-isopropylhydroxylamine, dimethylhydroxylamine or mixtures thereof.

10. (Previously amended) The composition of Claim 1 wherein the hydrophilic agent is diethylhydroxylamine, and the hydrophobic agent is dibutylhydroxylamine.

11. (new) A shortstopped synthetic rubber latex comprising:

a) a synthetic rubber latex; and

b) from 0.02 to 0.6 phm of shortstopping composition, wherein said shortstopping composition comprises at least one hydrophilic alkylhydroxylamine shortstopping agent and at least one hydrophobic free radical shortstopping agent which is a disubstituted hydroxylamine compound wherein the substitutions are the same and each substitution is a C_{4-10} alkyl.

REMARKS

Claims 1-5, 7, 9, and 10 are pending and stand rejected.

Claims 1 and 9 have been amended.

Claim 11 has been added. Support for this amendment is found on page 5, paragraph [0021].

Summary of Applicant's invention:

The compositions of the present invention include at least one hydrophilic radical scavenger (i.e., shortstopper) and at least one hydrophobic radical scavenger. The compositions are targeted for applications in the emulsion processes of rubber latexes. These compositions exhibit excellent performance not only as shortstoppers of free radical emulsion polymerizations but also as stabilizers of the corresponding polymers. Thus, these new compositions prevent additional polymerization in the particles without requiring additional stabilizer even after such polymers are steam stripped. They do so without the use of chemicals which carry a high safety, health, or environmental risk. In short, the Applicant has discovered a blend of shortstoppers which satisfies the commercial needs of latex manufacture, i.e., fast stopping of polymerization, small amounts of stabilizer remaining in the latex after stripping, effective stabilization of the latex, removal of initiator, and some volatile inhibitor to protect stripping columns from popcorn.

35 U.S.C. §112

Claim 9 stands rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claim 9 depends on cancelled claim 8. Claim 9 has been amended to properly depend on claim 1, making the rejection mute.

Claim 1-5, 7, and 9-10 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Examiner has suggested that in claim1, line 1 Applicant

insert the language "A composition for shortstopping free radical emulsion polymerizations". Applicant has amended Claim 1 as suggested.

35 U.S.C. §103(a)

Jackson

Claims 1-5, 7, and 9-10 remain rejected under 35 U.S.C. §103(a) as being unpatentable over Jackson, U.S. Patent Number 4,293,672. The Jackson reference addresses the problem of premature gellation of epoxy compounds during esterification. The problem is solved by pre-reacting the epoxy compound with a hydroxylamine. Examples of useful hydroxylamines are provided in column 3, lines 14 – 61 and includes many commonly known hydroxylamines. The list concludes with the catch-all phrase "mixtures thereof". The Jackson reference fails to teach, suggest, or describe all of Applicant's claim limitations and therefore the Jackson reference fails to provide a *prima facie* case of obviousness. In particular, the Jackson reference fails to teach , suggest, or describe 1) that a mixture of hydroxylamines must be used, 2) that hydroxylamines are usefully divided into two groupings of hydrophilic and hydrophobic, 3) that a shortstopping composition mixture contain both hydrophilic and hydrophobic hydroxylamines, or 4) that the hydrophobic hydroxylamine must be disubstituted with the disubstitution being identical C_{4-10} alkyl groups.

1) There is no teaching or suggestion in the Jackson reference that any mixture of hydroxylamines be employed, let alone a specific mixture of at least one hydrophilic alkylhydroxylamine, and at least one hydrophobic free radical shortstopping agent. While the list of hydroxylamines in the Jackson reference ends with the typical statement of "or a mixture thereof", there is no suggestion that any advantage would exists from using a mixture. In fact the

Jackson reference teaches away from any use of an alkylhydroxylamine mixture by only exemplifying the use of a single hydroxylamine in a composition of the invention. One in the art would not be motivated by a teaching that a single alkylhydroxyl amine works, to take the extra step of using a second amine.

2) The Jackson reference fails to differentiate between hydrophilic and hydrophobic alkylhydroxyl amines. The Jackson reference is not only silent on the hydrophilic/hydrophobic nature of the hydroxylamine, but it teaches away from any such grouping by listing together in random order both hydrophilic and hydrophobic amines in column 3, lines 14 to 61. This would suggest to one in the art that the hydrophilic/hydrophobic nature of the hydroxylamine is unimportant.

3) Further, the deficiencies of the Jackson reference in both teaching away from mixtures, and failing to differentiate between hydrophilic and hydrophobic amines compounds the failure to present a *prima facie* case of obviousness. One of skill in the art would certainly not be motivated by these compounded deficiencies to practice Applicant's claim requiring a composition containing at least one hydrophilic alkylhydroxylamine shortstopping agent and at least one hydrophobic free radical shortstopping agent.

4) Finally, Applicant claims that the hydrophobic hydroxylamine is a disubstituted hydroxylamine compound wherein the substitutions are the same and each substitution is a C_{4-10} alkyl. Many of the amines listed in the Jackson reference are not di-substituted, and only some of those are substituted with the same moiety. One in the art would find no motivation from the Jackson reference listing many types of useful alkylhydroxyl amines, to chose the specific combination of hydrophilic and hydrophobic hydroxyl amines claimed by Applicant.

Moreover, the Jackson reference fails to teach or suggest all of Applicant's claim limitations primarily because it solves a different problem in a different art area. The Jackson reference solves the problem of pre-mature gelation during esterfication of epoxy compounds. The problem is solved by the use of an inhibitor to prevent pre-polymerization of a monomer before it is further reacted to form polyester resin useful in the art of coatings, adhesives, and for composite products. Applicant's invention solves the problem of stopping a reaction that is in progress and preventing further polymerization in the art of synthetic rubber latexes. One in the art has no motivation to apply Jackson's solution for preventing pre-mature reactions prior to polymerization in order to solve the problem of post-polymerization reaction. One in the art of synthetic polymer latexes has no motivation to look toward the art of coatings, adhesives,and composites.

Miller

Claims 1-5, 7, and 9-10 remain rejected under 35 U.S.C. §103(a) as being unpatentable over Miller, U.S. Patent Number 4,654,450. The Miller reference describes the use of an inhibitor for vinyl aromatic compounds, the inhibitor being a mixture of at least one N,N-dialkylhydroxylamine having identical or different alkyl groups with an alkyl benzene sulfonic acid. The Miller reference includes a listing of useful dialkylhydroxylamines (column 2, line 60 to column 3, line 32) and includes mixtures. As with the Jackson reference discussed above, the Miller reference fails to teach, suggest, or describe all of Applicant's claim limitations and therefore the Miller reference fails to provide a *prima facie* case of obviousness. In particular, the Miller reference fails to teach, suggest , or describe 1) that a mixture of hydroxylamines must be used, 2) that hydroxylamines are usefully divided into two groupings of hydrophilic and

hydrophobic, or 3) that a shortstopping composition mixture contain both hydrophilic and hydrophobic hydroxylamines.

1) The list of hydroxylamines in the Miller reference includes a statement that mixtures of two or more N,N-dialkylhydroxylamines can be advantageously used in the composition. However, the Miller reference teaches away from the use of an alkylhydroxylamine mixture by exemplifying only compositions having a single hydroxylamine. One of skill in the art would not be motivated by examples having only one alkylhydroxylamine to practice a more complicated composition requiring at least two different alkylhydroxylamines, as claimed by Applicant.

2) The Miller reference fails to differentiate between hydrophilic and hydrophobic alkylhydroxyl amines. The Miller reference is not only silent on the hydrophilic/hydrophobic nature of the hydroxylamine, but it teaches away from any such grouping by randomly listing together both hydrophilic and hydrophobic amines in the list of column 3, lines 8 to 15. Such a mixed list would suggest to one in the art that the hydrophilic/hydrophobic nature of the hydroxylamine is unimportant.

3) Further, the deficiencies of the Miller reference in presenting a *prima facie* case of obviousness are compounded in that the reference both teaches away from mixtures, and fails to differentiate between hydrophilic and hydrophobic amines. One of skill in the art would not be motivated by this compounded deficiency to practice Applicant's claim requiring at least one hydrophilic alkylhydroxylamine shortstopping agent and at least one hydrophobic free radical shortstopping agent.

Moreover, the Miller reference fails to teach or suggest all of Applicant's claim limitations primarily because it solves a different problem. The Miller reference solves the

problem of pre-mature polymerization of vinyl aromatic monomers. The problem is solved by the use of an inhibitor containing both a dialkylhydroxylamine and an alkyl benzene sulfonic acid. Applicant's invention solves the problem of stopping a reaction that is in progress and preventing further polymerization of synthetic rubber latexes. One in the art has no motivation to look toward solutions for preventing polymerization of monomers to solve the problem of post-polymerization reactions.

Summary:

Both the Jackson and Miller references fail to provide a *prima facie* case of obviousness since they fail to teach or suggest all of Applicant's claim limitations. In particular the references fail to teach or suggest:

1) that a mixture of hydroxylamines must be used, (Jackson and Miller)

2) that hydroxylamines are usefully divided into two groupings of hydrophilic and hydrophobic, (Jackson and Miller)

3) that a shortstopping composition mixture contain both hydrophilic and hydrophobic hydroxylamines, (Jackson and Miller) or

4) that the hydrophobic hydroxylamine must be disubstituted with the disubstitution being identical C_{4-10} alkyl groups. (Jackson)

Additionally, one could not arrive at Applicant's invention by routine experimentation from the cited references, since in neither reference is a mixture of hydroxylamines recognized as an effective variable, nor is the hydrophilic or hydrophobic nature of the hydroxylamines recognized as an effective variable.

Double Patenting Rejection

Claims 1-5, 7 and 9-10 stand rejected under the judicially created doctrine of obviousness-type double patenting, as being unpatentable over claims 1-2 of U.S. Patent Number 6,495,065. A terminal disclaimer is being submitted with this response in compliance with 37 CFR §1.321(c), thereby overcoming this rejection.

In view of the above the Applicant believes that the reasons for rejection have been overcome, the claims herein should be allowable to the Applicant. Accordingly, reconsideration and allowance are requested.

Respectfully submitted;

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